

1 1. An electrically conductive composition which comprises:
2 a plurality of polymeric complexes; each polymeric complex comprising:
3 a strand of a π -conjugated polymer; and
4 a strand of a polyelectrolyte, the polyelectrolyte being non-covalently bonded to
5 the π -conjugated polymer and having at least one reactive functional group, the reactive
6 functional group facilitating the cross-linkage between the polymeric complexes when
7 the complexes are heated.

1 2. The composition of claim 1 wherein the π -conjugated polymer is selected from
2 the group consisting of polyaniline, polypyrrole, polyacetylene and polythiophene.

1 3. The composition of claim 2 wherein the polyelectrolyte is selected from the group
2 consisting of poly(butadiene-co-maleic acid), poly(vinylmethylether-co-maleic acid),
3 poly(acrylic acid), poly(ethylmethacrylate-co-acrylic acid) and poly(acrylamide-co-
4 acrylic acid).

1 4. The composition of 3 wherein the polyelectrolyte has a backbone and the
2 functional group comprises:
3 at least one unsaturated double bond in the polymer backbone of the
4 polyelectrolyte.

1 5. The composition of claim 4 wherein the functional group comprises at least one
2 pendent group selected from the group consisting of carboxylic acid groups, hydroxy
3 groups, amine groups, amide groups, nitrile groups, aldehyde groups and ketone groups.

1 6. The composition of claim 5 wherein there are at least two functional groups and
2 each functional group reacts with each other or optionally with each other and a
3 functional group from other polymeric complexes or optionally with each other and with
4 the functional groups of other polymeric complexes.

1 7. The composition of claim 6 wherein the polymeric complexes are water-borne or
2 optionally are dispersible in organic solvents.